

# PAUL N. HEIDEMAN

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**SUMMARY** Senior consultant specialising in innovation, warehouse and supply chain optimisation. Development of automation algorithms and real-time reporting systems to deliver resource efficiencies and cost savings. Bias towards data-driven decision-making. Ex-Ocado Technology Senior Manager and co-leader of ground-breaking Ocado "Skunkworks" team.

**EXPERIENCE** **Business Owner & Consultant, Icarus Logic Limited, UK (March 2023 - present)**  
Rollout of AI technologies as a key growth engine for clients. Client overview below (subject to existing NDAs):

- **eCommerce Fulfilment Company, UK**
  - Evaluated end-to-end of warehouse pick operation to assess potential for the introduction of optimisation algorithms. Identification of efficiency resource improvements of 10% - 20% with operative walk reduction of 36% - 53%.
  - Presented recommendation for product direction and for the future developments of software architecture to capture identified efficiency resource improvements.

**Engineering Manager, Ocado Technology, UK (May 2021 - Feb 2023)**

- **Autonomous Vehicle Development Project**
  - Responsible for the management of the Ocado Autonomous Delivery Vehicle Concept department, established to research benefits of Autonomous Mobility for Ocado. Teamwork based on 10X technology principles.
  - Established and managed processes for key certification and compliance.
  - Drove department growth by strategic recruitment of industry specialists.
  - Worked closely with technology provider, with specific project focus on safety, cybersecurity, cloud software integration and manufacturing production. Led to 2 successful integration demo milestones.
  - Led data science and simulation activities to enhance decision-making and reduce response time.

**Development Manager - "Skunkworks", Ocado Technology, UK (Jan 2016 - May 2021)**

- Established and co-lead the "skunkworks" department - an internal team established in accordance with 10x Technology principles - with the express goal of driving innovation and disrupting the status quo. Strong reliance on cutting-edge machine learning algorithms.
- Key Skunkworks achievements:
  - Applied novel deep learning models to forecasting, reducing waste in the UK by 50%.
  - Delivered chatbot for e-commerce website during pandemic unprecedented demand for customer services. Prototyped chatbots for deployment on Alexa and other platforms.
  - Developed a mobile app prototype that revolutionised grocery shopping by introducing a new approach based on meal-based shopping using state-of-the-art NLP techniques. The trial with real customers validated its success and led to the incorporation of its features into the e-commerce roadmap.
  - Utilised "AlphaGo"-style RL algorithms for superior 3D routing.
  - Investigated robotic solutions for delivery logistics from kerb-to-kitchen.
  - Prototyped vision models for product recognition, detection, and segmentation in various environments, expanding automation capabilities.

**Development Manager, Ocado Technology, UK (Feb 2014 - Jan 2016)**

- Managed area of 10-15 software and machine learning engineers in the Warehouse Management Systems team for R&D and production code delivery.
- Enhanced automation algorithms for warehouse efficiency to grow warehouse capability to 180k orders per week and 2 million items per day across 40k SKUs.
- Development of the next-generation Ocado Reporting Platform that remains central to Ocado Technologies.

**Team Leader, Ocado Technology, UK (July 2012 - Feb 2014)**

- Led team of 5 responsible for enhancing warehouse performance and fault tolerance.
- Directed real-time reporting system development for next-gen platform.
- Developed automation algorithms for new and existing warehouses.
- Established "War Room" for addressing bottlenecks with warehouse operations.

**Analyst/Engineer, Ocado Technology, UK (Sept 2005 - July 2012)**

- Engaged in various projects within the Warehouse Management Systems team
- Executed programming, solution design, business analysis, project coordination, and statistical analysis. Conducted data mining, designed algorithms, developed software, and conducted business reviews.

- Contributed to projects involving: real-time oversight, real-time pick resource allocation and adjustment, real-time warehouse traffic control systems, automated product lifecycle management, and automated product layout optimisation; leading to single warehouse capacity of consistently about 140k orders per week.

**ENGINEERING** Varying degrees of technical knowledge and experience including: Python, Rust, Javascript, Typescript, Scala, C#, Java, Go, C, Clojure, Julia, OpenCL, CUDA, Google Cloud Platform, Cassandra, PostgreSQL, Oracle, Linux, Windows, OS X, FreeBSD, ActiveMQ, RabbitMQ, Kubernetes, Docker, AWS, TensorFlow, PyTorch

- ENGAGEMENT**
- Mentoring with Moving Ahead - Mission Gender Equity (2023-present)
  - Machine Intelligence Practice Lead (2018-2019)
  - Code for Life - Rapid Router (2014-2016) - open-source game to help teachers teach programming to KS1 & KS2

**EDUCATION** **Rhodes University, Grahamstown, South Africa (2001-2004)**  
*BSc (Honours), Computer Science, 2004, First, Distinction, Academic Colours*  
*BSc, Applied Mathematics & Computer Science, 2003, Upper Second*